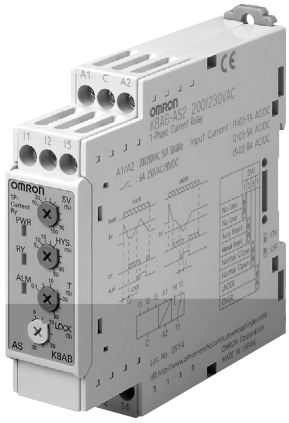
OMRON

Single-phase Current Relay
K8AB-AS

Ideal for current monitoring for industrial heaters and motors.

- Monitor for overcurrents or undercurrents.
- Manual resetting and automatically resetting supported by one Relay.
- Startup lock and operating time can be set separately.
- One SPDT output relay, 6 A at 250 VAC (resistive load).
- Switch the output relay between normally ON and normally OFF operation.
- Process control signal (4 to 20 mA) and commercial CT input (0 to 1 A or 0 to 5 A) supported.
- Relay warning status easily monitoring using LED indicator.
- Easy wiring with ferrules
  2×2.5 mm^2 solid or 2×1.5 mm^2 standard ferrules.
- CE mark compliance certified by third party.
  UL certification pending.



Model Number Structure

■ Model Number Legend

K8AB-□□□□
1 2 3 4

1. Basic Model
K8AB: Measuring and Monitoring Relays

2. Functions
AS: Single-phase Current Relay (One-sided operation)

3. Measuring Current
1: 2 to 20 mA AC/DC, 10 to 100 mA AC/DC, 50 to 500 mA AC/DC
2: 0.1 to 1 A AC/DC, 0.5 to 5 A AC/DC, 0.8 to 8 A AC/DC
3: 10 to 100 A AC, 20 to 200 A AC (See note.)

Note: The K8AB-AS3 is specially designed to be used in combination with the OMRON K8AC-CT200L Current Transformer (CT). (Direct input is not possible.)

4. Supply Voltage
24 VDC: 24 VDC
24 VAC: 24 VAC
100-115 VAC: 100 to 115 VAC
200-230 VAC: 200 to 230 VAC

Ordering Information

■ List of Models

Single-phase Current Relay	Measuring current	Supply voltage	Model
	2 to 20 mA AC/DC, 10 to 100 mA AC/DC, 50 to 500 mA AC/DC	24 VDC	**K8AB-AS1 24 VDC**
		24 VAC	**K8AB-AS1 24 VAC**
		100-115 VAC	**K8AB-AS1 100-115 VAC**
		200-230 VAC	**K8AB-AS1 200-230 VAC**
	0.1 to 1 A AC/DC, 0.5 to 5 A AC/DC, 8 to 8 A AC/DC	24 VDC	**K8AB-AS2 24 VDC**
		24 VAC	**K8AB-AS2 24 VAC**
		100-115 VAC	**K8AB-AS2 100-115 VAC**
		200-230 VAC	**K8AB-AS2 200-230 VAC**
	100 A AC, 200 A AC te.)	24 VDC	**K8AB-AS3 24 VDC**
		24 VAC	**K8AB-AS3 24 VAC**
		100-115 VAC	**K8AB-AS3 100-115 VAC**
		200-230 VAC	**K8AB-AS3 200-230 VAC**

Note: The K8A combination with the OMRON K8AC-CT200L Current Transformer (CT). (Direct input is not possible

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Curr	Applicable Relay	Model
	K8AB-AS3	**K8AC-CT200L**

Oth

Ratings and Specifications

■ Ratings

Operating power	**Non-isolated power supply**	24 VDC (1 W)
	Isolated power supply	24 VAC (3 VA), 100 to 115 VAC (4 VA), 200 to 230 VAC (5 VA)
Operate (SV)	**Operating value setting range**	10% to 100% of maximum rated input value
	Operating value	100% operation at set value
Reset (HYS.)	**Hysteresis**	5% to 50% of operating value
	Resetting method	Manual reset/automatic reset (switchable) Manual reset: Turn OFF operating power for 1 s or longer.
Operating time (T)		0.1 to 30 s (Value when input rapidly changes from 0% to 120%.)
Operating power ON lock (LOCK)		0 to 30 s (Value when input rapidly changes from 0% to 120%; lock timer starts when input reaches approximately 30% of set value.)
Setting accuracy		±10% of full scale
Time error		±10% of set value (Minimum error: 50 ms)
Input frequency	**K8AB-AS1/AS2**	DC input, 45 to 65 Hz
	K8AB-AS3	45 to 65 Hz
Continuous input	**K8AB-AS1/AS2**	Continuous input: 115% of maximum input, 10 s max.: 125% of maximum input
	K8AB-AS3	Continuous input: 240 A, 30 s max.: 400 A, 1 s max.: 1,200 A
Input impedance		5 Ω max.
Indicators		Power (PWR): Green LED, Relay output (RY): Yellow LED, Alarm outputs (ALM): Red LED
Output relays		One SPDT relay (6 A at 250 VAC, resistive load)

■ Specifications

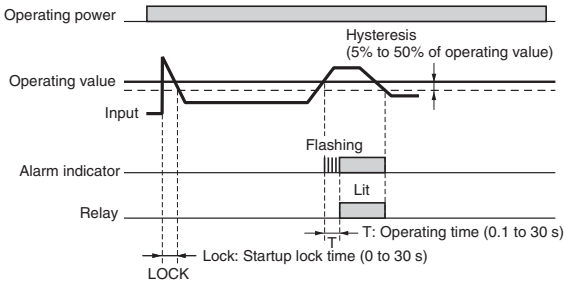
Ambient operating temperature		−20 to 60°C (with no condensation or icing)
Storage temperature		−40 to 70°C (with no condensation or icing)
Ambient operating humidity		25% to 85%
Storage humidity		25% to 85%
Altitude		2,000 m max.
Operating voltage range		85% to 110% of rated operating voltage
Rated power supply frequency		50/60 Hz ±5 Hz (AC power supply)
Output relays	**Resistive load**	6 A at 250 VAC (cos ϕ = 1) 6 A at 30 VDC (L/R = 0 ms)
	Inductive load	1 A at 250 VAC (cos ϕ = 0.4) 1 A at 30 VDC (L/R = 7 ms)
	Minimum load	10 mA at 5 VDC
	Maximum contact voltage	250 VAC
	Maximum contact current	6 A AC
	Maximum switching capacity	1,500 VA
	Mechanical life	10,000,000 operations
	Electrical life	Make: 50,000 times, Break: 30,000 times
Terminal screw tightening torque		1.2 N·m
Crimp terminals		Two solid wires of 2.5 mm^2, two crimp terminals of 1.5 mm^2 with insulation sleeves, can be tightened together
Insulation resistance		20 MΩ (at 500 V) between charged terminals and exposed uncharged parts 20 MΩ (at 500 V) between any charged terminals (i.e., between input, output, and power supply terminals)

Degree of protection	Terminal section: IP20, Rear case: IP40
Case color	Munsell 5Y8/1 (ivory)
Case material	ABS resin (self-extinguishing resin) UL94-V0
Weight	200 g
Mounting	Mounted to DIN Track or via M4 screws
Dimensions	22.5 (W) × 90 (H) × 100 (D) mm
Installation environment	Overvoltage Category III, Pollution Degree 2
Application standards	EN60255-5/-6
Safety standards	EN60664-1
EMC	EMI: EN61326 Industrial applications Electromagnetic interference wave CISPR11 Group 1, Class A: CISPR16-1/-2 Terminal interference wave voltage CISPR11 Group 1, Class A: CISPR16-1/-2 EMS: EN61326 Industrial applications Electrostatic discharge EN61000-4-2: 8 kV (in air) Radiating radio-frequency electromagnetic field EN61000-4-3: 10 V/m 1 kHz sine wave amplitude modulation (80 MHz to 1 GHz) Burst EN61000-4-4: 1 kV (I/O signal line), 2 kV (power line) Surge EN61000-4-5: 1 kV with line (power line), 2 kV with ground (power line) Conducted RF EN61000-4-6: 3 V (0.15 to 80 MHz) Power frequency magnetic field immunity EN61000-4-8: 30 A/m Voltage dip/short interruptions EN61000-4-11: 0.5 cycle, 0.180° each, polarity 100% (rated voltage)

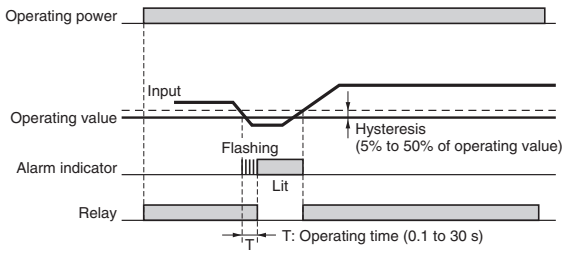
Connections

■ Wiring Diagram

Overcurrent Operation Diagram (Output: Normally Open)



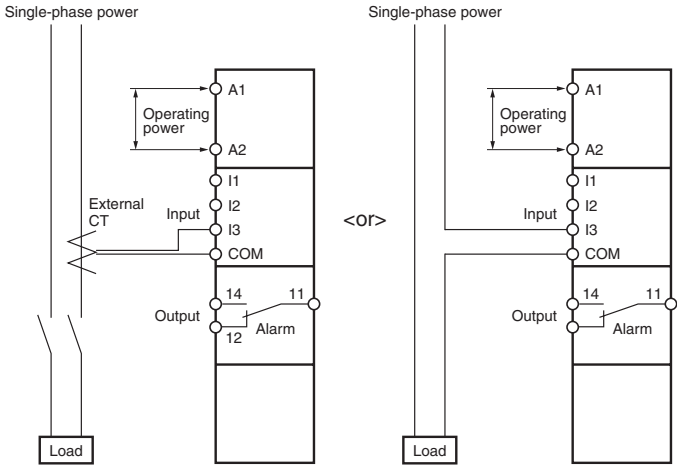
Undercurrent Operation Diagram (Output: Normally Closed)



Measuring Ranges and Connections

Model	Measuring range	Connection
K8AB-AS1	2 to 20 mA AC/DC	I1-COM
	10 to 100 mA AC/DC	I2-COM
	50 to 500 mA AC/DC	I3-COM
K8AB-AS2	0.1 to 1 A AC/DC	I1-COM
	0.5 to 5 A AC/DC	I2-COM
	0.8 to 8 A AC/DC	I3-COM
K8AB-AS3	10 to 100 A AC/DC (See note.)	I2-COM
	20 to 200 A AC/DC (See note.)	I3-COM

Note: The K8AB-AS3 is designed to be used in combination with the OMRON K8AC-CT200L Current Transformer (CT). (Direct input is not possible with this model.)



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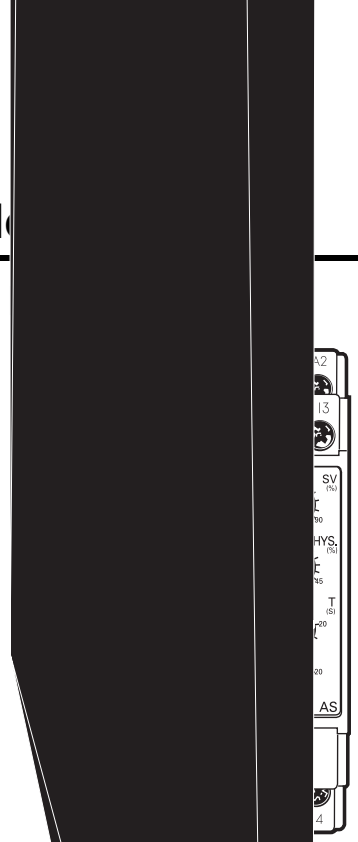


Indicators

Setting Knobs

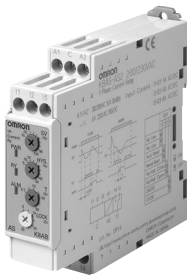
■ Func on DIP Switch

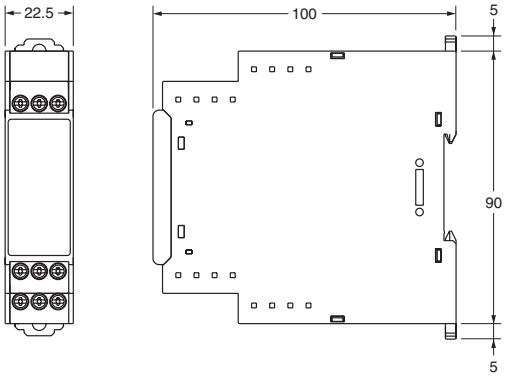
DIP Switch Functions

	Function			Default
SW1	Not used.	OFF	Not used.	OFF
		ON		
SW2	Resetting method	OFF	Manual reset	OFF
		ON	Automatic reset	
SW3	Relay drive method	OFF	Normally open (normally OFF)	OFF
		ON	Normally closed (normally ON)	
SW4	Operating mode	OFF	Overcurrent monitoring	OFF
		ON	Undercurrent monitoring	

Dimensions

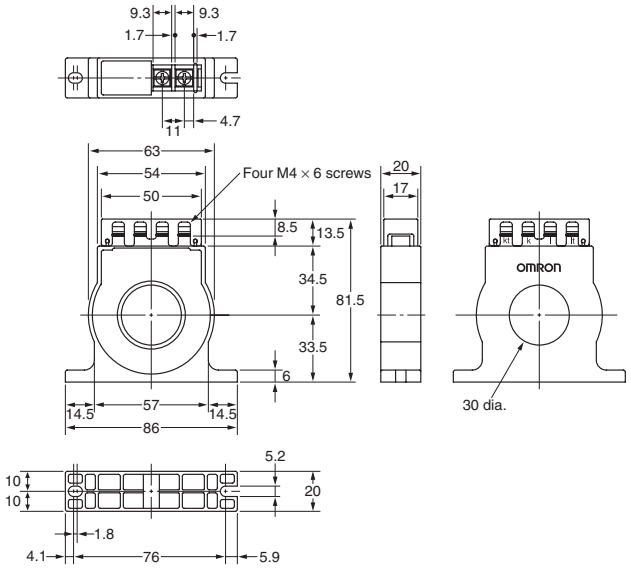
K8AB-AS



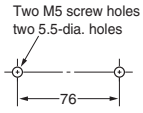


OMRON CT

K8AC-CT200L



Mounting Hole Dimensions



Safety Precautions

■ Precautions for Safe Use

Make sure to follow the instructions below to ensure safety.

1. Do not use or keep this product in the following environments.
   - Outdoors, or places subject to direct sunlight or wearing weather.
   - Places where dust, iron powder, or corrosive gases (in particular, sulfuric or ammonia gas) exist.
   - Places subject to static electricity or inductive noise.
   - Places where water or oil come in contact with the product.
2. Make sure to install this product in the correct direction.
3. There is a remote risk of electric shock. Do not touch terminals while electricity is being supplied.
4. Make sure to thoroughly understand all instructions in the Instructions Manual before handling this product.
5. Make sure to confirm terminal makings and polarity for correct wiring.
6. Tighten terminal screws firmly using the following torque. Recommended torque: 0.54 N·m
7. Operating ambient temperature and humidity for this product must be within the indicated rating when using this product.
8. There is a remote risk of explosion. Do not use this product where flammable or explosive gas exists.
9. Make sure that no weight rests on the product after installation.
10. To enable an operator to turn off this product easily, install switches or circuit breakers that conform to relevant requirements of IEC60947-1 and IEC60947-3, and label them appropriately.
11. For DC input, use a SELV power-supply capable of overcurrent protection. Specifically, a SELV power-supply has a double or reinforced insulation for input and output, and output voltage of 30 Vr.m.s with 42.4 V at peak or DC60V maximum. Recommended power-supply: Model S8VS-06024□. (Omron product)

■ Precautions for Correct Use

For Proper Use

1. Do not use the product in the following locations.
   - Places subject to radiant heat from heat generating devices.
   - Places subject to vibrations or physical shocks.
2. Make sure to use setting values appropriate for the controlled object. Failure to do so can cause unintended operation, and may result in accident or corruption of the product.
3. Do not use thinner or similar solvent for cleaning. Use commercial alcohol.
4. When discarding, properly dispose of the product as industrial waste.
5. Only use this product within a board whose structure allows no possibility for fire to escape.

About Installation

1. When wiring, use only recommended crimp terminals.
2. Do not block areas around the product for proper dissipation of heat. (If you do not secure space for heat dissipation, life cycle of the product will be compromised.)
3. To avoid electrical shocks, make sure that power is not supplied to the product while wiring.
4. To avoid electrical shocks, make sure that power is not supplied to the product when performing DIP switch settings.

Noise Countermeasures

1. Do not install the product near devices generating strong high frequency waves or surges.
2. When using a noise filter, check the voltage and current and install it as close to the product as possible.
3. In order to prevent inductive noise, wire the lines connected to the product separately from power lines carrying high voltages or currents. Do not wire in parallel with or on the same cable as power lines.
   Other measures for reducing noise include running lines along separate ducts and using shield lines.

To avoid faulty operations, malfunctions, or failure, observe the following operating instructions.

1. When turning on the power, make sure to realize rated voltage within 1 second from the time of first supply of electricity.
2. Make sure to use power supply for operations, inputs, and transformer with the appropriate capacity and rated burden.
3. Maintenance and handling of this product may only be performed by qualified personnel.
4. Distortion ratio of input wave forms must be 30% or less. Use of this product with circuits that have large distortion in wave forms may result in unwanted operations.
5. Using this product for thyristor controls or inverters will result in errors.
6. When setting the volume, adjust the control from the minimum side to the maximum side.

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Warranty and Application Considerations

Read and Understand this Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Warranty and Limitations of Liability

WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

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OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS, OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

Application Considerations

SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used.

Know and observe all prohibitions of use applicable to this product.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

Disclaimers

PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON *Warranty and Limitations of Liability.*

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons. Consult with your OMRON representative at any time to confirm actual specifications of purchased product.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. N142-E1-01 **In the interest of product improvement, specifications are subject to change without notice.**

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